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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte THOMAS J. KELLY, DANIEL C. WOOD, ALAN L. FERGUSON, PAUL W. BIERDEMAN, BRIAN L. JENKINS, TRENT R. MEISS, and ANDREW J. SWANSON

Appeal 2009-006563
Application 10/646,685
Technology Center 3600

Before RICHARD E. SCHAFER, RICHARD TORCZON, and SALLY C. MEDLEY, *Administrative Patent Judges.*

SCHAFER, *Administrative Patent Judge.*

DECISION ON APPEAL[1]

Applicants appeal the Final Rejection of Claims 1-6, 8-25, and 27-38. 35 U.S.C. § 134(a). We have jurisdiction. 35 U.S.C. § 6(b). We affirm-in-part.

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

The Rejections

The Examiner finally rejected the claims on the following grounds: [2]

1. Claims 1-6, 8-25, 27-29, and 32-35 under 35 U.S.C. § 103(a) as unpatentable over Pruzan[3] and Bray[4];
2. Claim 38 under 35 U.S.C. § 103(a) as unpatentable over Pruzan, Bray, and Elson[5];
3. Claims 30, 31, 36, and 37 under 35 U.S.C. § 103(a) as unpatentable over Pruzan and Klemba[6];
4. Claims 30 and 31 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Subject Matter of the Claimed Invention

Applicants claim a method for providing proxy services in a network of electronic modules connected by data links. The data links may be wired or wireless. The modules perform certain designated functions on the network. The proxy services are substitute services that replace some or all of the functions ordinarily provided by an actual control module. In Applicants' method, the proxy services are performed by a gateway processor. The gateway processor includes "proxy logic elements" – software programming that emulates functions of a control module. The gateway processor also includes an address map that correlates certain of the destination module addresses with proxy logic identifiers. Applicants define the address map as software logic corresponding one or more replaced

[2] App. Br. 17; Ans. 2.
[3] U.S. Patent 6,728,603.
[4] U.S. Patent 6,865,460.
[5] U.S. Publication 2003/0014521.
[6] U.S. Publication 2004/0225740.

control modules to address identifiers for the proxy software logic. Written Description 14, ¶ 44. Thus, the software/proxy logic identifiers provide the address in the gateway memory for the substitute software. Messages from a source, including the address of a destination module, are routed through the gateway processor. Based upon the address map, the messages destined for a control module are intercepted and rerouted to the proxy logic element that emulates the functions associated with that destination module. Thus, the proxy logic element, rather than the destination module, carries out functions of the destination module.

Representative Claim 1 is reproduced (paragraphing added):

> 1. A method for providing proxy services in a network of modules included in a work machine environment, the method performed by a gateway and comprising:
>
> detecting a first message sent by a source module on a first data link, wherein the first message is directed to a destination module and includes an address identifier corresponding to the destination module;
>
> retrieving the first message and extracting the destination address identifier from the message;
>
> routing, based on the destination address and an address map including proxy logic identifiers, the first message to a proxy logic element in the gateway that performs functions associated with the destination module based on data included in the first message.

App. Br. 30.

The Pruzan Reference

The Pruzan patent describes a network including a number of different modules connected by data links. Specifically, Pruzan teaches a network for managing communications between on-board and off-board modules.

Pruzan 1:11-13. Pruzan's Fig. 1 schematically illustrates the network in the environment of an automobile.

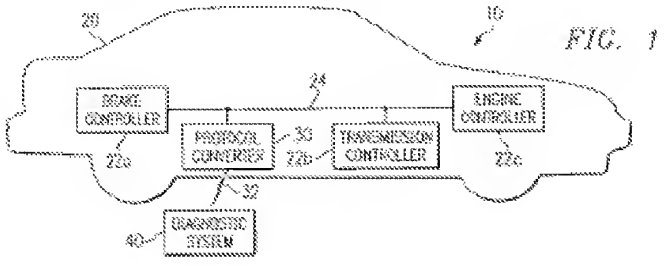

FIG. 1

The illustrated network includes three exemplary modules: brake controller 22a, transmission controller 22b, and engine controller 22c connected to bus 24. These controllers monitor or control the specified vehicle component. Pruzan 1:31-36. The controllers may be microprocessors, or any other type of logical device for controlling and/or monitoring a function and/or component of the vehicle. Pruzan 5:11-16.

The network also includes a diagnostic system module 40. The diagnostic system communicates with the controllers via protocol converter 30. Pruzan 3:43-46. The protocol converter is also linked to the controllers. The protocol converter acts as a gateway that generally facilitates communication (1) between controllers and (2) between the diagnostic system and the controllers. Pruzan 3:40-42. The protocol converter monitors the messages traveling on bus 24 between the controllers and exchanges messages with the controllers and the diagnostic system. Pruzan 3:50-55.

The protocol converter includes a computer 70 having a processor 74. Pruzan Fig. 2. The processor evaluates messages using, *inter alia*, the message destination address to determine whether it is directed to one of the

controllers. Pruzan 7:58-62. Where the message is directed to a controller, the processor takes certain steps including formatting the message, sending it to an appropriate protocol transceiver which in turn, sends the message in the appropriate protocol for communication over bus 24 and on to the addressed controller. Pruzan 7:63 – 8:7. Pruzan also teaches that the protocol converter computer (70) can emulate the functions of modules on bus 24 thus teaching the use of proxy logic elements that perform the function of the controller. Pruzan 9:10-23.

Claims 1-6, 8-25, 27-29, and 38

The examiner rejected Claims 1-6, 8-25, and 27-29 under 35 U.S.C. § 103(a) as unpatentable over the combined teachings of Pruzan and Bray. Claim 38 was rejected over the combined teachings of those references and Elson.

Applicants argue that the claims have not been shown to be unpatentable because Pruzan does not expressly describe that the protocol converter includes an address map that correlates the controller address in the message with the address of the emulation software. App. Br. 21-22.

The examiner answers that the concept of routing the message based on the destination address and an address map including proxy logic identifiers is present in Pruzan's teachings. Ex. Ans. 4 and 10-11. For support, the examiner references Pruzan at 4:5-39; 7:1-10, 54-55 and 57-67; 8:8-28; and 9:10-23. The examiner further references the Bray patent at 4:23-28 and 9:1-15. Ex. Ans. 11.

The referenced sections of Pruzan teach that the protocol converter evaluates messages, including the destination address, to determine its destination before passing it on and that the protocol converter may include

emulation software that perform the functions of the network modules (nodes). Bray teaches that modules on a network may be implemented by, *inter alia*, virtual software modules. Bray also teaches the benefits of using a network of modules. These benefits include easy updating of the modules.

The person having ordinary skill in the art would fully understand the principles of operation of the system and methods described by Pruzan and Bray. These principles of operation include message addressing and the techniques for directing those messages to a specified destination using the address. In our view, one having ordinary skill in the art would have recognized that in order for Pruzan's computer 70 to emulate the function associated with, for example, controlling the vehicle transmission, the messages ordinarily addressed to that controller would necessarily have to be rerouted to the emulated controller. One having ordinary skill in the art would further recognize that one way for the message to be rerouted to the appropriate emulation software, would be by means of software correlating the original destination address with the memory address of the emulation software –i.e., routing the message by means of the destination address and an address map including emulation/proxy logic address identifiers.

The subject matter of Claim 1 would have been obvious. We affirm the rejection of that claim over the combined teachings of Pruzan and Bray.

With respect to the rejections of Claims 2-6, 8-25, 27-29, and 38, Applicants have not explained how the additional subject matter of those claims would have rendered their subject matter separately patentable. Rather, they argue that they are patentable for the same reasons as Claim 1. App. Br. 24 and 28. We affirm the rejection of those claims also. 37 C.F.R. § 41.37(c)(vii).

Claims 32-35

Claims 32-35 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combined teachings of Pruzan and Bray.

Claims 32-35 include the requirement that the gateway includes software emulating two network modules and routing messages between the modules based upon information in the message and an address map. The italicized portions of representative Claim 32, reproduced below, highlight these requirements:

> 32. A method for providing proxy services in a work machine including modules interconnected by a data link and a gateway, the *gateway including first program logic and second program logic serving as proxies for modules* in the work machine, the method performed by the gateway comprising:
>
> processing a message in the first program logic, wherein the message includes information identifying a destination module that is configured to perform an operation using data included in the message;
>
> *routing, based on an address map and the information included in the message, the message from the first program logic to the second program logic;* and
>
> performing, by the second program logic, the operation on the data included in the message.

App. Br. 38-39.

The examiner succinctly stated his position:

> As Pruzan discloses, the computer (70) is able to emulate any node on the bus and take over the functions of the node. This would include handling the communications of the node. Pruzan is capable of emulating more than one node at a time. If this is the case, then the computer (70) will answer all the bus traffic for the node that is being emulated and perform whatever function the node would normally perform. So if the computer (70) is now emulating the engine and transmission controller, any

> messages that were before being routed to the physical nodes of the transmission controller and the engine controller would instead be intercepted and acted upon by the computer (70). Otherwise, the vehicle would fail to function correctly. We already know from Pruzan et al. that these controllers are constantly exchanging messages (see lines 21-23, on column 1). Now the emulated nodes would be exchanging information.

Ex. Ans. 11-12.

Applicants respond arguing that the Examiner's statement is an unsupported assumption:

> The Examiner concludes that because Pruzan teaches that controllers 22 can exchange information, computer 70 (performs the emulation), would somehow "[route], based on an address map and the information included in the message, the message from the first program logic to the second program logic," and the second logic would "[perform] the operation on the data included in the message" during emulation. The Examiner justifies this assertion by stating that "this communication would have to continue even if two controllers were being emulated." Office Action at 9. This is not a Pruzan teaching, but rather an unsupported assumption about the functionality of the emulation feature. As discussed above in connection with claim 1, Pruzan does not disclose such routing with respect to even a single logic element. In fact, Pruzan does not teach that emulation involves routing of any kind.

App. Br. 25.

We disagree with Applicants' characterization that the examiner has made an unwarranted assumption. We think the examiner has drawn reasonable inferences based on Pruzan's and Bray's teachings and the level of ordinary skill in the art as represented by the cited prior art. As we noted above, the level of ordinary skill in the art includes knowledge of how

messages are addressed and techniques for directing messages to the destination address in a network. Pruzan teaches that the modules communicate with each other and that computer 70 can emulate the functions of the modules. See Pruzan 3:40-42. It is reasonable to infer that multiple emulated modules would also communicate with each other and that messages from an emulated module directed to a second module would be rerouted to the second module's emulation software. One having ordinary skill in the art would recognize that an address map – a correlation between the address of the original destination module and the address of the emulation software—would be a way of rerouting the message from the first emulated module to the second emulation module.

The subject matter of Claim 32 would have been obvious. We affirm the rejection of that claim. As Applicants have relied upon the same arguments for Claims 33-35 and has not otherwise argued for their separate patentability, we affirm the rejection of these claims also. 37 C.F.R. § 41.37(c)(vii).

Claims 30, 31, 36, and 37

Claims 30, 31, 36, and 37 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Pruzan and Klemba. These claims are directed to a system and method that includes two work machines each having a gateway processor. Additionally, one of the gateway processors is configured so that if that processor "determines" based upon the identification of a destination module that it can not process the message, the message gets routed to the second gateway. Representative Claim 30 highlighting the limitations argued by Appellants is reproduced below (paragraphing added):

> 30. A system for processing messages in a work machine environment, comprising:

> *a first work machine including a first gateway and a first destination module; and*
>
> *a second work machine including a second gateway and a second destination module,*
>
> wherein the first gateway is configured to:
>
> receive a first message having an identifier that identifies a destination module as a target for the first message, and
>
> determine, based on the identifier, whether to process the first message with the first gateway or to route the first message from the first gateway, wherein:
>
> when the first gateway can process the first message, it performs functions similar to those of the first destination module using data included in the first message, and
>
> *when the first gateway cannot process the first message, it routes the first message to the second gateway.*

App. Br. 37-38.

Applicants argue that the applied art does not teach or suggest the emphasized routing feature; i.e., routing a message from a first gateway to a second gateway of another work machine "when the first gateway cannot process the message." App. Br. 26. The Examiner views Klemba as teaching this feature, stating: "In Klemba, if a message is not addressed to a current machine, the message is passed on. This can be interpreted as unable to process the message." Ans. 12.

Klemba teaches a "multi-hop" network, in which messages are transmitted through intermediary service points ("SPs"). Klemba 5-6, ¶¶ 0050 and 0054; Fig. 11. In a multi-hop network, the message is received by an intermediate service point and, if that service point is not the addressed destination service point, passes the message on to another service point.

Applicant argues that Klemba's multi-hop system does not "determine, based on the identifier," whether to process the message or pass it on.

We disagree that Klemba's multi-hop network does not perform this function. A message traveling in a multi-hop network includes a destination identifier --the address of the destination service point. The message will ultimately be processed by the destination service point. Each intermediate service point along the route to the destination determines, based upon the destination address, whether it should process the message (it is the destination service point) or pass it on (the service point is not the destination).

Notwithstanding our understanding of Klemba's teaching, we reverse the rejection. While we agree with the examiner that a multi-hop network of the type disclosed by Klemba could be incorporated into Pruzan's network to expand the network's reach, the examiner has not provided an adequate reason why one skilled in the art would want to expand the reach of Pruzan's network using a multi-hop network. There must be an apparent reason to combine the known elements in the fashion claimed by applicants. *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

A prima facie case of obviousness has not been established with respect to the subject matter of Claim 30 and we reverse the rejection of that claim. Since our rationale is also applicable to the subject matter of Claims 31, 36, and 37, we reverse the rejection of Claims 36 and 37 under 35 U.S.C. § 103(a) as well.

Claims 30 and 31

Claims 30 and 31 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Claims 30 and 31 require a work machine environment including two work machines, each including a gateway. One of the gateways must be configured to receive a message that identifies a destination module and determines, based on the identifier, whether to process the message or to route the message from the first module. If the gateway can process the message it does so. If it can not, it routes the message to a second gateway.

The examiner says the subject matter of these claims is not described. Specifically, the examiner says that the "specification consistently discloses the invention as replacing the modules and it never discloses that the proxy logic and destination modules that the proxy logic represents are present at the same time." Ex. Ans. 3.

We disagree. The application describes a work machine (720) having a gateway (715) and destination module. Written Description 24 ¶ 64. The gateway (715) receives messages addressed to the module. Written Description 24 ¶ 64. The gateway (715) then determines whether to route the messages to the module or process them as the proxy for the module. Written Description 24 ¶ 64. The cited portions of the written description reasonably convey that the proxy logic and the module it emulates are present at the same time.

The Examiner has failed to demonstrate that the subject matter of Claims 30 and 31 is not described.[7] We reverse the rejection of those claims.

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[7] Our review of the Examiner's rejection of Claims 30 and 31 is limited to the reasons stated by the examiner. Our reversal should not be construed as holding that the subject matter of Claims 30 and 31 is supported by the written description. We hold only that the examiner's rationale does not satisfy his burden of establishing that the subject matter is not described.

DECISIONS

We affirm the rejections of Claims 1-6, 8-25, 27-31, and 35-38 under 35 U.S.C. § 103(a). We reverse the rejections of Claims 32-34 under 35 U.S.C. § 103(a); and Claims 30 and 31 under 35 U.S.C. § 112, first paragraph.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

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